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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/235,387	01/22/1999	NATALIE GIROUX	53921/19	4794

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EXAMINER	
NGUYEN, PHUONGCHAU BA	
ART UNIT	**PAPER NUMBER**
2665	

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/235,387	GIROUX ET AL.	
	Examiner	Art Unit	
	Phuongchau Ba Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8-14-02 amendment* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 25, 1-5, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (5,953,338) in view of Siu et al (6,252,851).

Regarding to claims 25, 1-5, 10:

-As to claims 25 and 1, Ma discloses, in figures 1, 3 and 5-6, a communication network 120 comprising a network core 130 wherein traffic (i.e., voice and data) entering the core 130 is aggregated from a plurality of connections (i.e., connections from clients A and B, fig.3) onto paths (virtual paths 601-609, fig.6) or 401-406 (fig.5a, see also figs. 5b-5d) within the network core 320, and wherein traffic (i.e., voice and data) exiting the network core 130 is segregated from the paths (virtual paths 601-609, fig.6; see also fig.5a) onto connections (i.e., connections to clients A and B, figs.1 & 6) outside

the network core 130, the traffic (i.e., voice and data) comprising real time traffic (voice) and non-real time traffic (data) , the non-real time traffic (data) which enters the network core 130 being received from connections 312 & 316 that are each associated with one of a plurality of classes [i.e., QoS=CBR, VBR, ABR(i.e. IP traffic), unspecified) of transmission service, the real time traffic (voice) and the non-real time traffic (data) each being aggregated onto respective real time paths (CBR 603 & 607) and non-real time paths (connection oriented 605 & connectionless 606), the real time traffic (CBR or voice) on each real time path 603 & 607 being transmitted from a corresponding source (clients A & B, see fig.1) to a corresponding destination (clients A & B, see fig.1) according to a first class (QoS=CBR) of path transmission service, and non-real time traffic (data) on each non-real time path being transmitted from a corresponding source (clients A & B, see fig.1) to a corresponding destination (clients A & B, see fig.1) according to a second class (QoS of connectionless of IP traffic, or QoS of unspecified traffic) of path transmission service.

Ma does not explicitly disclose that flow control is applied between the source and the destination corresponding to each non-real time path to

regulate the rate of transmission of the non-real time traffic along each non-real time path.

Siu discloses ABR rate control mechanism (flow control) for adjusting desired rate into ATM network {col.2, lines 60-62}.

Therefore, it would have been obvious to a skilled artisan to implement the ABR rate control mechanism to the non-real time path {i.e., connectionless virtual path of IP traffic or connection-oriented virtual path of frame-relay traffic in Ma (5,953,338); col.12, line 4} of the ATM network 120 for adjusting transmission rate of packets such as IP packets/traffic and for avoiding overflow due to bandwidth limitations toward the destination (Siu, col.3, lines 18-22).

-As to claim 2, Ma discloses figure 3 wherein the Virtual Channel Connections VCC (virtual connections on ATM edge switch in figure 3), the Virtual Path Connection VPC (virtual path 609 in figure 6) {col.1, line 66 to col.2, line 38}, the ATM network 120 (see fig.1).

-As to claim 3, the flow control which applied between the source and the destination read on the ABR rate control mechanism in Siu's system {col.2, lines 60-62}.

-As to claim 4, the flow control regulated the rate transmission of non-real time traffic on the path by providing an explicit rate of transmission to the source, wherein the explicit rate read on column 6, lines 19-28 (Siu, 6,252,851).

-As to claim 5, although Ma does not explicitly disclose that the non-real time Virtual Path Connection operated according to an ABR service category, but Ma does discloses that a unique virtual path will be provisioned for each specified traffic type as indicated by its quality of service requirements {col.11, lines 61-63} and non-real time virtual paths 605 and 606 for Connection-Oriented traffic (for frame relay) and Connectionless traffic (for IP traffic) {col.12, lines 3-7}. However, Siu discloses that ABR service is provided in ATM network which is connected to Ethernet {col.2, lines 27-42, 57-67 and col.3,

lines 1-2}. Therefore, it would have been obvious to a skilled artisan to implement the ABR service in Siu's system into the non-real time Virtual Path Connection (virtual paths 605 and 606 for Connection-Oriented traffic, i.e. frame relay; and Connectionless traffic, i.e. IP traffic) in Ma's system for minimized switch buffer requirement and cell loss in transported data and allowed users to have fair access to the available bandwidth in ATM networks {col.2, lines 27-31}

-As to claim 10, Ma does not disclose that the flow control is provided by a plurality of ABR flow control segments between the source and the destination. Siu discloses ABR flow control is being used when transmitting TCP traffic (in IP) {col.2, lines 57-64, and col.4, lines 6-16}. Therefore, it would have been obvious to a skilled artisan to implement the ABR flow control (ABR rate control mechanism, col.2, lines 60-61) into the ATM network 120 for adjusting transmission rate of packets such as IP packets/traffic and for avoiding overflow due to bandwidth limitations toward the destination (Siu, col.3, lines 18-22). Also, there are several connections (segments) between the

source (clients A and B) and the destination (clients A and B) in figures 1a-1b; thus, the ABR flow control is implemented on a plurality of connections (segments). Hence, the flow control between the source and destination is provided by a plurality of ABR flow control segments between the source and the destination.

3. Claims 15-19 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (5,953,338) in view of Siu et al (6,252,851) as applied to claims 25 and 1-5 above, and further in view of Varma et al (5,959,993).

Regarding to claims 15-16:

Ma does not disclose a first queue for storing real time traffic, a second queue for storing non-real time traffic, a scheduling mechanism.

Varma et al (5,959,993) discloses that each per-VC queue is used for each service class such as CBR (real-time traffic) and ABR (non-real time traffic) {col.1, lines 38-41}. Varma also discloses a scheduler 38 (scheduling mechanism) {col.2, lines 41-43; col.7, lines 3-14}.

Therefore, it would have been obvious to a skilled artisan to include per-VC queues for storing real-time and non-real time traffics and the scheduler for outputting/directing real-time and non-real time traffics from its corresponding queues (i.e., real-time traffic such as CBR or non-real time traffic such as ABR) in the ATM network in Ma (5,953,338) for redirected unused bandwidth among active flows and segregated traffic classes {Varma, col.2, lines 41-55}.

Regarding to claim 17:

The flow control regulated the rate transmission of non-real time traffic on the path by providing an explicit rate of transmission to the source, wherein the explicit rate read on column 6, lines 19-28 (Siu, 6,252,851).

Regarding to claims 18-19:

-As to claim 18, the explicit rate of transmission is determined based upon a state of congestion of the second queue which read on the explicit rate

that based upon the data available at buffer 115 in column 6, lines 21-28 (Siu, 6,252,851).

-As to claim 19, the state of congestion determined by the second queue's depth and growth rate, which read on column 4, lines 31-67 and column 5, lines 1-5 (Siu, 6,252,851).

Regarding to claims 6-7:

-As to claim 6, Ma does not disclose that each connection is provisioned with a guaranteed bandwidth and the non-real time traffic on the path is provisioned with a guaranteed bandwidth that is obtained by summing the corresponding guaranteed bandwidths of each of the connections aggregated onto the path

Varma also discloses that each connection (virtual connections within virtual paths connections) is provisioned with a guaranteed bandwidth (guaranteed BW; col.7, lines 20-34), and the non-real time traffic (ABR traffic) on the path (VC) is provisioned with a guaranteed bandwidth (MCR-minimum cell rate bandwidth in term of cells per second) that is obtained by summing the

corresponding guaranteed bandwidths of each of the connections aggregated onto the path (claim 6)---the guaranteed BW could be shared with other low priority VCs, thus, the guaranteed BW for non-real time ABR traffic is summing of corresponding of each of the connections (other VCs) aggregated onto the path (virtual path).

Therefore, it would have been obvious to a skilled artisan to implement Varma's teaching of providing a guaranteed bandwidth for virtual connections corresponding to the class of the traffics (CBR, ABR) to the ATM network 120 in Ma's system. The motivation for doing is to ensure that the transmission of high priority traffic is before the transmission of low priority traffic.

-As to claim 7, the path are guaranteed minimum bandwidths (claim 7) because the guaranteed minimum bandwidth of the path read on the MCR bandwidth for non-real time traffic of a VC within a path (virtual path; col.1, lines 35-37) in Varma (see also col.7, lines 25-29).

4. Claims 20-23 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (5,953,338) in view of Siu et al (6,252,851) and Varma et al (5,959,993) as applied to claims 15-19, and further in view of Calvignac et al (5,557,608).

Regarding to claim 20:

Ma, Siu and Varma do not disclose that the first queue is served in preference to the second queue such that at every service opportunity the second queue is served only if the first queue is determined to be empty, and if the first queue is determined not empty then the first queue is served until empty.

Calvignac discloses in column 4, lines 4-10 that the buffer with the lower priority class is served only if the buffer with the highest priority is empty, and the service of the low priority packets is interrupted when a high priority packet arrives before the end of the service of the low priority packets. The service of the low priority is resumed after the high priority packet has been served.

Therefore, it would have been obvious to a skilled artisan to implement Calvignac teaching of preempting the low priority packet and later resume transmission of the preempted low priority packet automatically in the ATM network in Ma's teaching. The motivation for doing so is to avoid retransmission of low priority packet when aborting the transmission of a low priority packet upon the arrival of a high priority packet and transmit the high priority packet {col.1, lines 50-56, Calvignac}.

Regarding to claim 21:

The real time and non-real time virtual paths read on figure 6 in Ma (5,953,338) wherein the Virtual Path Connection VPC (virtual paths 601-609). The virtual path 601 for CBR-voice/real-time data and virtual paths 605 or 606 for frame relay or IP data; col.12, lines 1-7), the ATM network 120 (see fig.1).

Regarding to claim 22:

The real time class of transmission service is CBR (claim 22) which read on figure 6 wherein the virtual path 603 for CBR real time class of transmission

service {Ma (5,953,338)}. The non-real time class of transmission service is the ABR (claim 22) read on figure 6 wherein the virtual path 605 or 606 for connection-oriented frame-relay traffic or connectionless IP traffic {Ma (5,953,338)}.

Regarding to claim 23:

The flow control read on the ABR rate control mechanism in Siu's system {col.2, lines 60-62} regulated the rate transmission of non-real time traffic on the path by providing an explicit rate of transmission to the source, wherein the explicit rate read on column 6, lines 19-28 (Siu, 6,252,851).

Regarding to claims 11-14:

-As to claims 11-12, Ma, Siu and Varma do not explicitly disclose that the set of queues, which are corresponding to the plurality of classes of transmission service (CBR and ABR), are at the source before aggregating the non-real time traffic onto the path. Calvignac discloses a set of queues (high priority queue 42 and low priority queue 43, see figure 13) at the source {col.8,

lines 12-15}. Therefore, it would have been obvious to a skilled artisan to implement a set of queues for each transmission class service as taught by Calvignac at the source ports of the ATM network in Ma's system for minimized the processing time within each node in the fast packet switch network {Calvignac, col.1, lines 25-39}.

-As to claim 13, traffic management (read on the ABR flow control in Siu's system) {Siu (6,252,851), col.2, lines 57-64, and col.4, lines 6-16}.

-As to claim 14, Ma, Siu, Calvignac do not explicitly disclose the traffic management comprising scheduling of the connections (it is assumed that the connections as claimed are non-real time connections, emphasis added) onto the path. Siu discloses the traffic management (ABR flow control){see ABR rate control mechanism, col.2, lines 60-61 in Siu (6,252,851)}. Varma further discloses Round Robin scheduling in controller 38 for deciding which virtual connection VC will be allowed to transmit {col.7, lines 35-44}. Therefore, it would have been obvious to include the scheduling of connections in the

controller 38 of Varma's teaching into the ABR flow control mechanism {see ABR rate control mechanism, col.2, lines 60-61 in Siu (6,252,851)} for ensuring that the transmission with high priority VCs is granted before the low priority VCs {see also col.7, lines 13-15 & 45-47 in Varma}.

5. Claims 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (5,953,338) in view of Siu et al (6,252,851), Varma et al (5,959,993) and Calvignac et al (5,557,608) as applied to claims 20-23, and further in view of Charny et al (5,745,697).

Ma, Siu, Varma and Calvignac do not explicitly disclose that each real time path is associated with a Peak Cell Rate and the flow control mechanism determines the explicit rate of transmission from each of the non-real time path by deriving an available bandwidth for the non-real time path based on the PCRs of the real time connections and allocating a share of the available bandwidth to each of the non-real time paths.

Charny discloses that left over bandwidth from the use (PCR as claimed) of a resource (link, switch or end system) by CBR is used for ABR service {col.1,

lines 57-59}. Therefore, it would have been obvious to a skilled artisan to implement Charny's teaching of using the left over bandwidth in ATM network of Ma's system for determining a rate at which a flow can transmit data so that the bottleneck resource is shared in a fair and efficient manner {Charny, col.1, lines 41-44}.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (5,953,338) in view of Siu et al (6,252,851), Varma et al (5,959,993) as applied to claims 1-7 above, and further in view of Charny et al (5,745,697).

Varma discloses in column 2, lines 41-46 that WFQ scheduler allows re-distribution of un-used BW among active flows.

Ma, Siu and Varma do not disclose a share of the transmission bandwidth in additional to the guaranteed bandwidth for the path is made available to the path if the transmission bandwidth allocated to the real time traffic is unused.

Charny discloses that left over bandwidth (unused bandwidth) from the use of a resource (link, switch or end system) by CBR (real-time traffic) is used

for ABR (non-real time traffic) service {col.1, lines 57-59}. Therefore, it would have been obvious to a skilled artisan to implement Charny's teaching of using the left over bandwidth in ATM network of Ma's system for determining a rate at which a flow can transmit data so that the bottleneck resource is shared in a fair and efficient manner {Charny, col.1, lines 41-44}.

7. Applicant's arguments filed 8-14-02 have been fully considered but they are not persuasive.

A/. Applicant argued that Ma does not disclose provisioning a non-real time path having a guaranteed transmission bandwidth by cited the column 11, lines 63-66 wherein Ma discloses a path aggregating non-real time connections onto a virtual path will be provided for unspecified quality of services.

In reply, applicant is directed to column 11, lines 63-65 wherein Ma discloses an additional path (with a guaranteed bandwidth) which will be used by the virtual path network service provider to offer unguaranteed service or a best effort service to other client (col.12, lines 14-17) .

B/. Applicant argued that Ma does not disclose "received at the core source from a plurality of connections...such that at least two of the plurality of connections do not respectively have a same class of transmission service".

In response to applicant's arguments, the recitation "at least two of the plurality of connection do not respectively have a same class of transmission service" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

C/. Applicant argued that Siu does not teach applying TCP acknowledgement based flow control across a network core.

In reply, Siu does disclose ABR rate control mechanism across the network core {col.2, lines 60-62}.

D/. Applicant argued that there is not mention of ATM traffic.

In reply, Siu is an ATM system, thus, data transmitted via ATM switch is an ATM cell/data/traffic.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchau Ba Nguyen whose telephone number is 703-305-0093. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 703-308-53406602. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

PN

Phuongchau Ba Nguyen
Examiner
Art Unit 26635

October 21, 2002

10/21/02